

LESSON PLAN

Discipline: Civil Engineering			Name of The Teaching Faculty: BHAGABATA JENA		
Subject: Structural mechanics (TH1)			Semester From Date: 01-08-2023 To Date 30-11-2023		
SEMESTER-3rd			No. Of Weeks: 16		5P/WEEK
No. of Days/week class allotted: 05 period per week (Tue, Wed, Thu, Fri, Sat-1 Period each)					TOTAL PERIOD-75
MONT H	Week	DATE	DAYS	Syllabus to be covered	NO. OF PERIODS AVAILABLE
				1. Review Of Basic Concepts	4
AUG	1ST	01-08-2023	Tue	Basic Principle of Mechanics: Force, Moment, support conditions, Conditions of equilibrium,	1
		02-08-2023	Wed	C.G & MI, Free body diagram	1
		03-08-2023	Thu	Review of CG and MI of different sections	1
		04-08-2023	Fri	Numerical problems	1
				2. Simple And Complex Stress, Strain	15
		05-08-2023	Sat	2.1 Simple Stresses and Strains	1
	2ND	08-08-2023	Tue	Introduction to stresses and strains: Mechanical properties of materials – Rigidity, Elasticity, Plasticity, Compressibility, Hardness, Toughness, Stiffness, Brittleness, Ductility, Malleability, Creep, Fatigue, Tenacity, Durability,	1
		09-08-2023	Wed	Types of stresses - Tensile, Compressive and Shear stresses, Types of strains - Tensile, Compressive and Shear strains, Complimentary shear stress - Diagonal tensile / compressive Stresses due to shear, Elongation and Contraction, Longitudinal and Lateral strains,	1
		10-08-2023	Thu	Poisson's Ratio, Volumetric strain, computation of stress, strain, Poisson's ratio, change in dimensions and volume etc, Hooke's law - Elastic Constants, Derivation of relationship between the elastic constants	1
		11-08-2023	Fri	Numerical problems	1
		12-08-2023	Sat	2.2 Application of simple stress and strain in engineering field:	
		3RD	16-08-2023	Wed	Behaviour of ductile and brittle materials under direct loads, Stress Strain curve of a ductile material, Limit of proportionality, Elastic limit, Yield stress, Ultimate stress, Breaking stress,

		17-08-2023	Thu	Percentage elongation, Percentage	1	
		18-08-2023	Fri	Numerical problems	1	
		19-08-2023	Sat	Deformation of prismatic bars due to	1	
	4TH	22-08-2023	Tue	Deformation of prismatic bars due to its	1	
				2.3 Complex stress and strain		
		23-08-2023	Wed	Principal stresses and strains:	1	
		24-08-2023	Thu	Concept of Principal stress and Principal	1	
		25-08-2023	Fri	major and minor principal stresses and	1	
		26-08-2023	Sat	Mohr's Circle and its application to solve	1	
	5TH	29-08-2023	Tue	Numerical problems	1	
			31-08-2023	Thu	Numerical problems	1
				3.Stresses In Beams and Shafts	10	
	1ST	01-09-2023	Fri	Stresses in beams due to bending:	1	
			02-09-2023	Sat	Curvature of beam – Position of N.A.	1
	2ND	05-09-2023	Tue	Shear stresses in beams: Shear stress	1	
			07-09-2023	Thu	Numerical problems	1
			08-09-2023	Fri	Stresses in shafts due to torsion:	1
			09-09-2023	Sat	Torsion of solid and hollow circular	1
	3RD	12-09-2023	Tue	Torsional shearing stresses, angle of	1	
			13-09-2023	Wed	Combined bending and direct stresses:	1
			14-09-2023	Thu	Numerical problems	1
			15-09-2023	Fri	Conditions for no tension, Limit of	1
					4.Columns and Struts	4
		16-09-2023	Sat	Columns and Struts	1	
	4TH	21-09-2023	Thu	Definition Short and Long columns, End	1	
			22-09-2023	Fri	Equivalent length / Effective length,	1
			23-09-2023	Sat	Euler's theory of long columns, Critical	1
				5.Shear Force and Bending Moment	12	
				5.1 Types of loads and beams:		
	5TH	26-09-2023	Tue	Types of Loads: Concentrated (or) Point	1	
			27-09-2023	Wed	Types of Supports: Simple support,	1
			28-09-2023	Thu	Types of Reactions: Vertical reaction,	1
			30-09-2023	Sat	Calculation of support reactions using	1
				5.2 Shear force and bending moment in		
	2ND	03-10-2023	Tue	Shear Force and Bending Moment: Signs	1	
			04-10-2023	Wed	B.M of general cases of determinate	1
			05-10-2023	Thu	S.F and B.M diagrams for Cantilevers,	1
			06-10-2023	Fri	Numerical problems	1
			07-10-2023	Sat	Numerical problems	1
	3RD	10-10-2023	Tue	Numerical problems	1	
			11-10-2023	Wed	Position of maximum BM, Point of	1
			12-10-2023	Thu	Relation between intensity of load, S.F	1
					6.Slope and Deflection	10
			13-10-2023	Fri	Introduction: Shape and nature of	1
		14-10-2023	Sat	Relationship between slope, deflection	1	
	4TH	17-10-2023	Tue	Class test	1	
			18-10-2023	Wed	Slope and deflection of cantilever and	1
			19-10-2023	Thu	Slope and deflection of cantilever and	1
			20-10-2023	Fri	Slope and deflection of cantilever and	1
	6TH	31-10-2023	Tue	Slope and deflection of cantilever and	1	

NOV	1ST	01-11-2023	Wed	Numerical problems	1
		02-11-2023	Thu	Numerical problems	1
				7.Indeterminate Beams	10
		03-11-2023	Fri	Indeterminacy in beams	1
		04-11-2023	Sat	Principle of consistent	1
	2ND	07-11-2023	Tue	Principle of consistent	1
		08-11-2023	Wed	Analysis of propped cantilever beam by	1
		09-11-2023	Thu	Analysis of fixed beam by principle of	1
		10-11-2023	Fri	Analysis of two span continuous beams	1
		11-11-2023	Sat	SF diagrams (point load and udl covering	1
	3RD	14-11-2023	Tue	BM diagrams (point load and udl	1
		15-11-2023	Wed	BM diagrams (point load and udl	1
		16-11-2023	Thu	Numerical problems	1
				8.Trusses	10
		17-11-2023	Thu	Introduction	1
		18-11-2023	Fri	Types of trusses	1
	4TH	21-11-2023	Sat	statically determinate and indeterminate	1
		22-11-2023	Tue	Degree of indeterminacy	1
		23-11-2023	Wed	Stable and unstable trusses	1
		24-11-2023	Thu	Advantages of trusses.	1
		25-11-2023	Fri	Analysis of trusses: Analytical method (1
	5TH	28-11-2023	Sat	Analysis of trusses: Analytical method (1
		29-11-2023	Tue	Analysis of trusses: Analytical method (1
		30-11-2023	Wed	Numerical problems	1